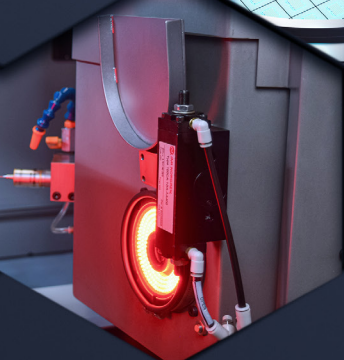
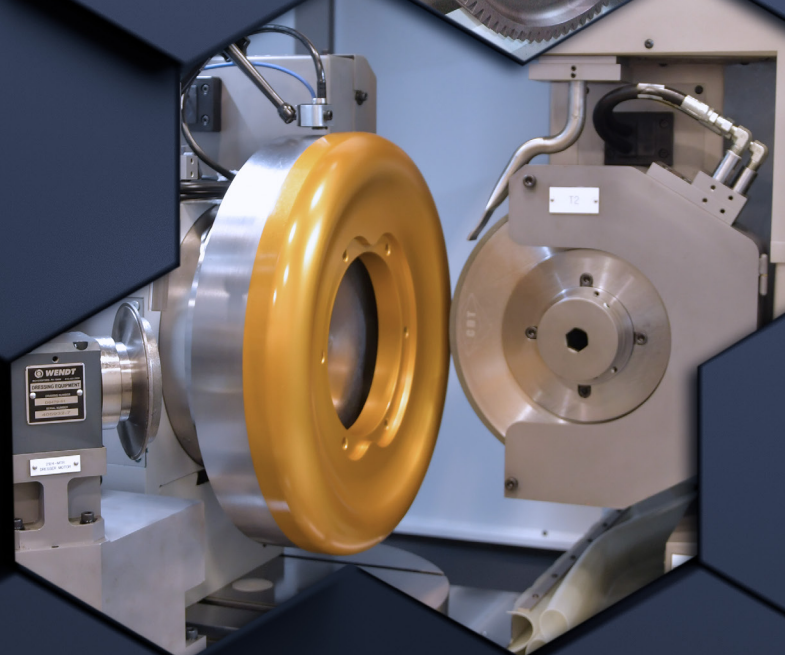
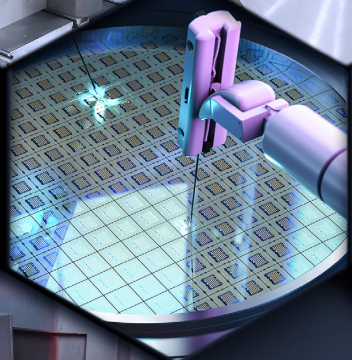
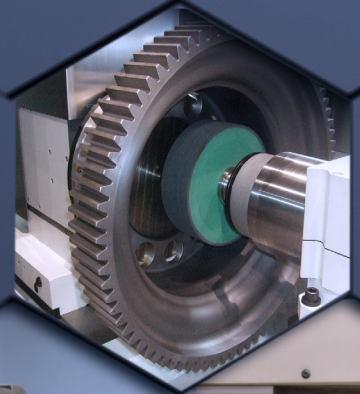
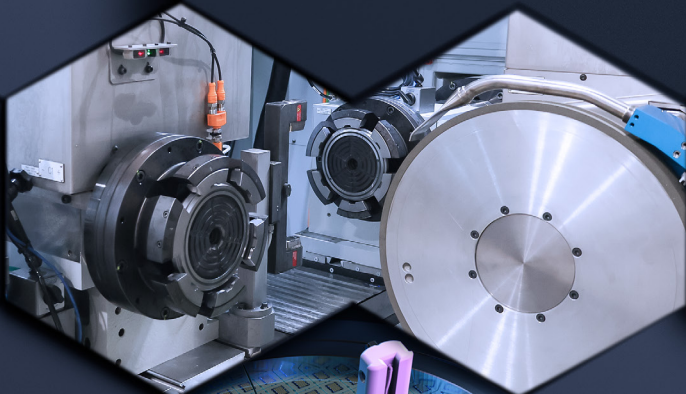




USACH TECHNOLOGY

YOUR TECHNOLOGY SOLUTIONS PROVIDER





DREAM IT. BUILD IT. TOGETHER.

Welcome to USACH, the premier provider of cutting-edge technology in manufacturing systems.

Located in Elgin, Illinois, our company boasts Swiss engineering roots and a steadfast commitment to turning your dreams into reality. For over half a century, we've collaborated closely with our clients to craft single-machine solutions and multi-machine production cells with seamless automation. From precision fuel injection components to aerospace engine parts, semiconductor boules to professional

lawnmower blades, our revolutionary grinding systems have revolutionized industries across the board. Leveraging multi-axis interpolation and a suite of integrated technologies, including on-board gauge systems and X-ray guided part orientation, we deliver precision custom solutions tailored to diverse materials, including ceramics, silicon, and silicon carbide. At USACH, we don't just meet expectations; we exceed them, offering the innovative solutions our clients have only dreamed of.

INDUSTRY APPLICATIONS

With USACH's diverse portfolio, we have many solutions to solve industry challenges. Below are some of our recent solutions for popular industries. We strive to continuously learn about your respective industries so we can strategically be innovative to support your needs.



AGRICULTURAL

When it comes to gears, shafts or cylinders for tractors and other farm equipment USACH provides the highest precision grinders that best suit the needs of its customer. Cutting greens for the PGA requires high precision mower reels.

USACH is a key supplier to multiple manufacturers who trust our machines to grind the cutting edge of the non-uniform welded reels of mowers to micron precision.



SEMI CONDUCTOR BUSINESS

Silicon Carbide (SiC) is vital in various electronic devices like diodes, MOSFETs, and JFETs, supplanting silicon in high-power, high-frequency applications such as electric vehicles and 5G. USACH has revolutionized the

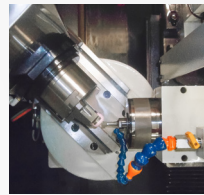
manufacturing of boules and etching chamber components by combining technologies to complete the parts in one process and one machine. USACH's approaches reduce costs and improve accuracy in semiconductor manufacturing



MEDICAL

USACH Offers an exceptional range of machine features. These features combined with the advanced software offered by USACH grant unmatched solutions for multi axis interpolation grinding. The on board gauge and vision systems guarantee

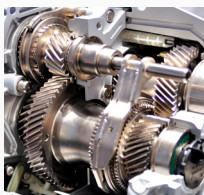
for the highest process consistency and overall part quality.



ADVANCED MATERIAL

With its multi axis interpolation capabilities, USACH provides unmatched grinding solutions for sphere and mirror grinding. Complex alumina applications are processed with several spindles and a variety of tools

automatically change to the grinding spindles. Combining processes in one machine with multiple spindles provide customers with unique solutions that complete parts in one setup to the highest qualities and accuracies.



AUTOMOTIVE

By providing simultaneous grinding solutions with cutting edge automation systems, USACH provides reliable and cost effective grinding solutions for drive-train, steering and electric motor components.

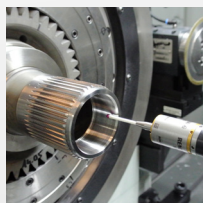
Benefiting from its custom machine building capabilities machines and systems are built to match automotive specifications. Interconnectivity and Industry 4.0 integration has been a standard for USACH for years.



AEROSPACE

With decades of experience in custom machine building USACH is specialized in producing ID/OD, universal and cylindrical grinding solution for small to very large parts. From small injection components to large engine and

landing gear components we provide unique solutions solving complex manufacturing challenges.



DEFENSE

We excel in custom grinding solutions for defense, munition and tactical systems to produce complex components in one setup. Our systems guarantee the highest product precision with revolutionary gauge systems and processes. Our ability to build custom machines provide our end-users with cutting edge solutions to manufacture components in higher accuracies, improved operation quality and overall customer satisfaction.

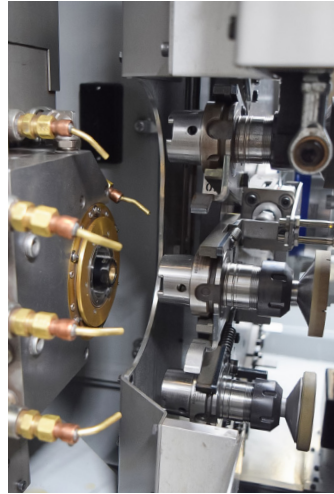
KEY FEATURES

AVAILABLE ON ALL PLATFORMS

TOOL CHANGER HORIZONTAL AUTOMATIC COOLANT NOZZLE EXCHANGE

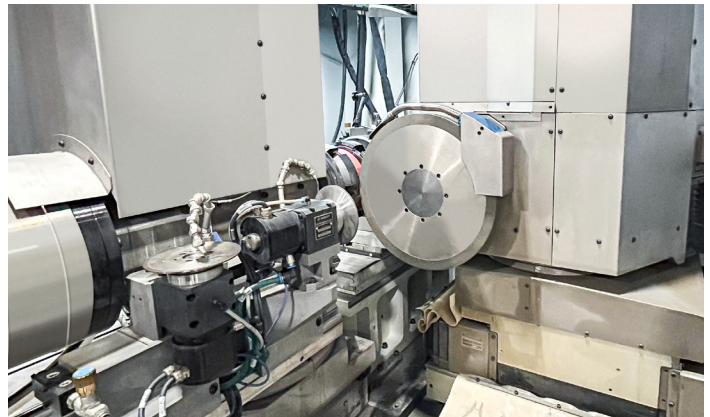
A game changer when it comes to complete grinding of parts in one setup. USACH offers horizontal and vertical tool changers to support multiple grinding spindles on its wheel head. With that, the ideal grinding speed with multiple spindles and tools can be accomplished. The wheel changers have a capacity of 6 - 20 tools, pending on the tool sizes.

With the spindles mounted on top of the X-Z cross axis system, the spindles are directly interfacing with the tool changers. To provide ideal coolant supply during machining / grinding coolant nozzles are exchange with the wheels.



B2 AXIS WITH WORK HEAD AND TWO DRESSERS VERTICAL HORIZONTAL

Multiple sizes of work-heads with sub micron roundness accuracy for part sizes of up to 36" are offered. All work-heads are directly driven providing programmable RPM, positioning and interpolation with up to 5 axes. For complete grinding of parts between two driven work heads, with or without centers, a second work head with independent axis is available. Precision OD's, round or none round, are ground between the two workheads. Faces and ID's on both sides of the part are sequentially ground, with a part handshake from one workholding to the other.



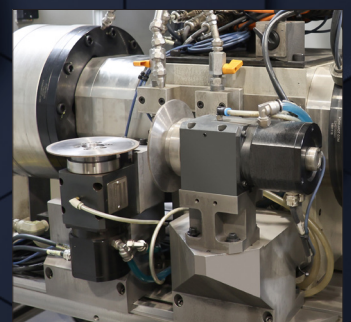
CENTER DRIVE

For parts that require grinding from both sides a center drive system is mounted on top of the B2 axis. The accuracy of the B-axis guarantees a repeatability and posing accuracy of 20 millions to present both sides of the part to the grinding spindles.



DRESSER FOR HORIZONTAL AND VERTICAL DRESSING MOUNTED ON WORK-HEAD B-AXIS

The sub micron positioning accuracy of the B2 axis allows the hosting of the dresser systems next or behind the Workhead. Thus eliminate the need for swing down attachments or occupying areas in the cross axis travel of the spindle.





4 SPINDLE WHEEL HEAD

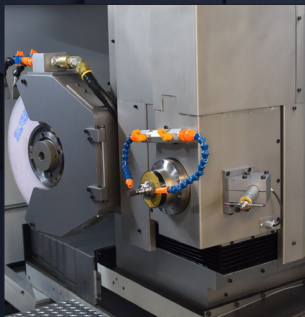
The standard four (4) spindle wheel head can be equipped with a selection of spindles for wheel diameters ranging from 0.04" (1mm) to 20" (500mm). Equipped with the high precision infinitely adjustable b-axis OD's and ID's are ground in any angle. For interpolation grinding the optional hydrostatic b-axis is applied. Spindles are mounted on high precision infinitely adjustable hydrostatic swivel axis.



VERTICAL AXIS:

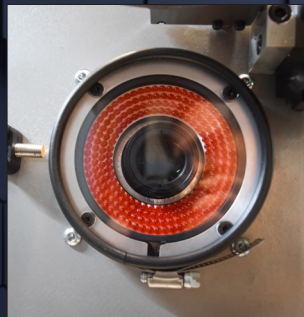
Y-Axis on the wheel head used for several applications.

- With horizontal spindle as an interpolation axis with the X-Axis for bores contours or threads located off center anywhere on the part.
- With vertical spindle as 5 Axis interpolation grinder for OD and face contours or Surface grinding of stationary parts clamped in the work head.
- With either solution a 3D or optical gage is also mounted on the vertical axis to maximize gaging flexibility.



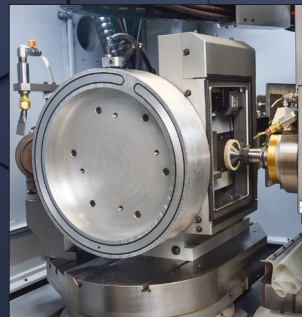
GAGING SYSTEM

A multitude of gaging systems are implemented to control processes and to align and orient parts based on mechanical or structural features.



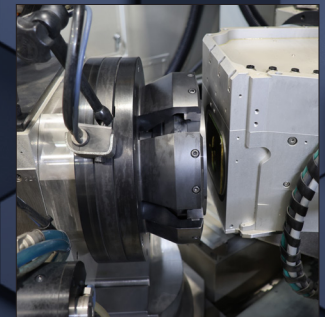
OPTICS

Optical gaging to locate special features on parts after clamping for radial part alignment.



WHEEL GAGING WITH LASER GAGE

Controlling the wheel diameter and wear of the dressing disc, USACH applies a laser gage determining with sub-micron accuracy the size of the wheel and subsequently the wear of the dressing disc.



X-RAY

Revolutionizing the Si and SiC industry USACH applies X-Ray Imaging technology to align the parts in the machine fully automatically based on the orientation of the parts micro structure.

USACH PRO SERIES PLATFORM

USACH Pro Series is a machine platform that combines multiple processes into one machine to grind parts complete on all sides. To gain access to the different sections of the part the part is clamped multiple times during the process. Automatic Part alignment is done by using a variety of vision, metrology, and gage systems.

Equipped with two work-heads the parts are ground driven by both work heads on each work head separate, allowing the access of the parts from both sides and the OD.

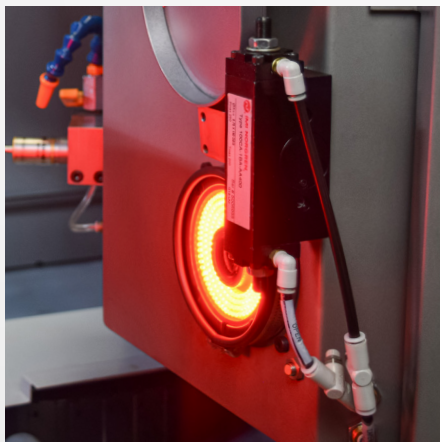
The wheel head can be equipped with horizontal and vertical grinding spindles. The wheels on all spindles can be automatically exchanged with the Horizontal and vertical wheel changers.

With the two high precision hydrostatic B-axis under work head and one under the grinding spindles, parts are ground with true 6 axis interpolation.

The machines are applied for especially effective when processing special materials such as Silicium Carbide boules, Sapphire, Ceramic, Silicium and Alumina's.



USACH BoulePro 200AX



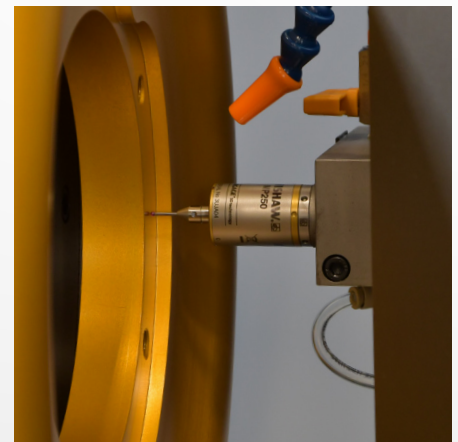
VISION SYSTEMS

Advanced vision systems enable precise part inspection and alignment, ensuring exceptional accuracy and quality in the grinding process.



METROLOGY INTEGRATION

X Ray Part Alignment guarantee consistent tool accuracy and contribute to the overall precision of the grinding operation.



PROBING

The incorporation of probing technology enables real-time feedback and tool corrections, further improving the accuracy and efficiency of the grinding process.

USACH OPEN ARCHITECTURE SYSTEM[®]

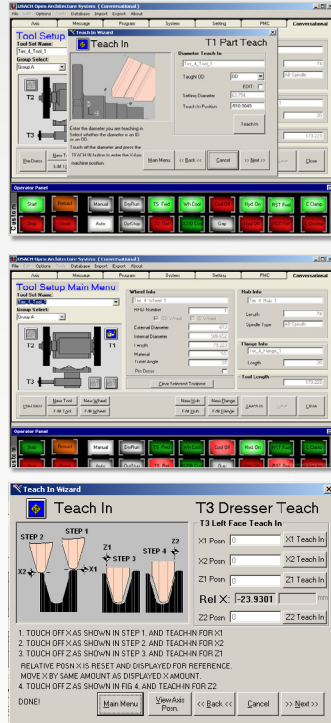
OPERATION AND PROGRAMMING SOFTWARE

The USACH Open Architecture System[®] is a PC based software package interfaced with Siemens or Fanuc control hardware.

The USACH Open Architecture System[®] takes conversational programming to the next level. Part programs, which can be freely named, are icon based and are created by simply dragging and dropping the desired operations into the program box.

The USACH Open Architecture System[®] offers many cutting edge programming and operating tools such as:

- Dry run cycles
- Automatic wheel dressing feature
- Off line programming
- Contour programming in several axes
- Simple error debugging



USACH DIGITAL TWIN

Our USACH Digital Twin capability utilizes the Siemens Create MyVirtual Machine integrated software tool. This tool allows users to virtually run the controls software on their local PC. Pairing this with a 3D model of our machines enables the functionality to simulate axial movement, determine tool paths, and create cycle configurations; helping to alleviate the risk of testing new developments on physical machines.

The added benefit of this software is visible throughout our production process, from concept to finalization. The flexibility allows us to troubleshoot potential mechanical issues prior to finalizing designs of new machines, creating, and troubleshooting part programs, optimization of machine configurations/cycles, test integration of our HMI and Open Architecture, and simultaneous development with machine assembly. This is an interactive tool that we use both internally, as well as provide to our clients, to accelerate development and the functionality of our units.



USACH ID/OD PLATFORMS

USACH 100 – 100 XL

USACH 100

- Max Part Diameter: 560 mm (22")
- X-Axis Travel: 500 mm (19.7")
- Z-Axis Travel: 450 mm (17.7")

USACH 100 XL

- Max Part Diameter: 560 mm (22")
- X-Axis Travel: 500 mm (19.7")
- Z-Axis Travel: 600 mm (23.6")



USACH 200

- Max Part Diameter: 1000 mm (40")
- X-Axis Travel: 600 mm (23.6")
- Z-Axis Travel: 750 mm (29.5")



USACH 5 axis ID/OD grinder platforms meet the needs of advanced material manufacturers. These USACH machine platforms are ideally suited for high precision grinding applications that require a high level of flexibility. With their consolidated functionality these machines are able to extend the typical standard range of grinding machines thus allowing for complex automated processes in single setups combining ID, OD, Bevel, Face, Radius, and small feature grinding including

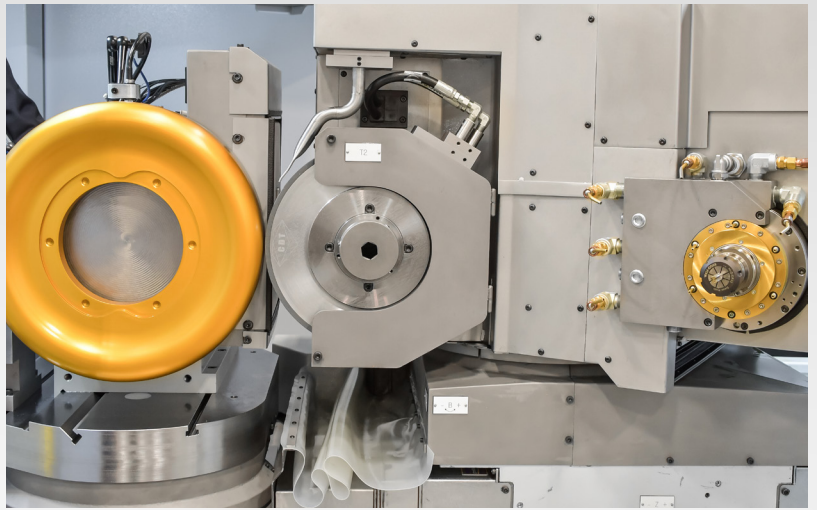
allowing to use roughing and finishing wheels to achieve higher surface finishes and consistent part quality.

These USACH platforms contribute significantly to the manufacturer's bottom line. With their streamlined efficiencies and unique capabilities, the USACH custom grinder positions the manufacturer to support growth in its targeted industries and opens the door for innovation in advanced material markets.

ID/OD PLATFORM FEATURES

MULTI-SPINDLE TECHNOLOGY

Industry leading hydrostatic B1/B2 axes swiveling technology for both workhead and wheelhead side for enhanced machine flexibility and to support fully integrated 5-Axis control architecture to achieve all grinding operation under optimal grinding conditions.

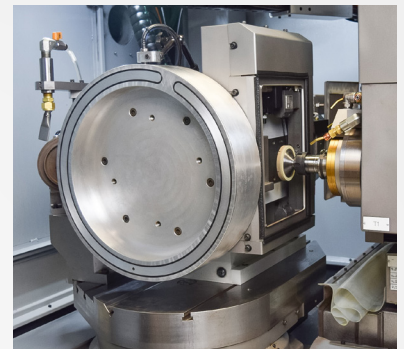
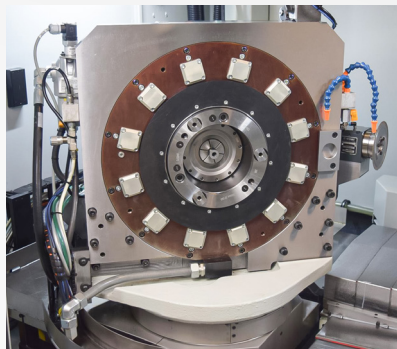


TOOL CHANGE SPINDLE (ATC)

For speeds up to 60,000 rpm mounted on horizontal or vertical axis

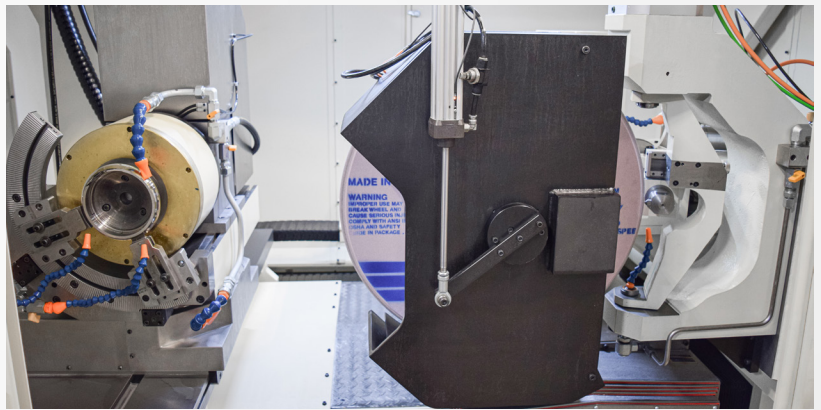
VERTICAL Y AXIS IDEALLY SUITED FOR:

- Face grinding of stationary Parts
- Grooves and slots on face and OD
- Off-center hole drilling and tapping
- Gaging of off-center features
- Automatic Part Centering



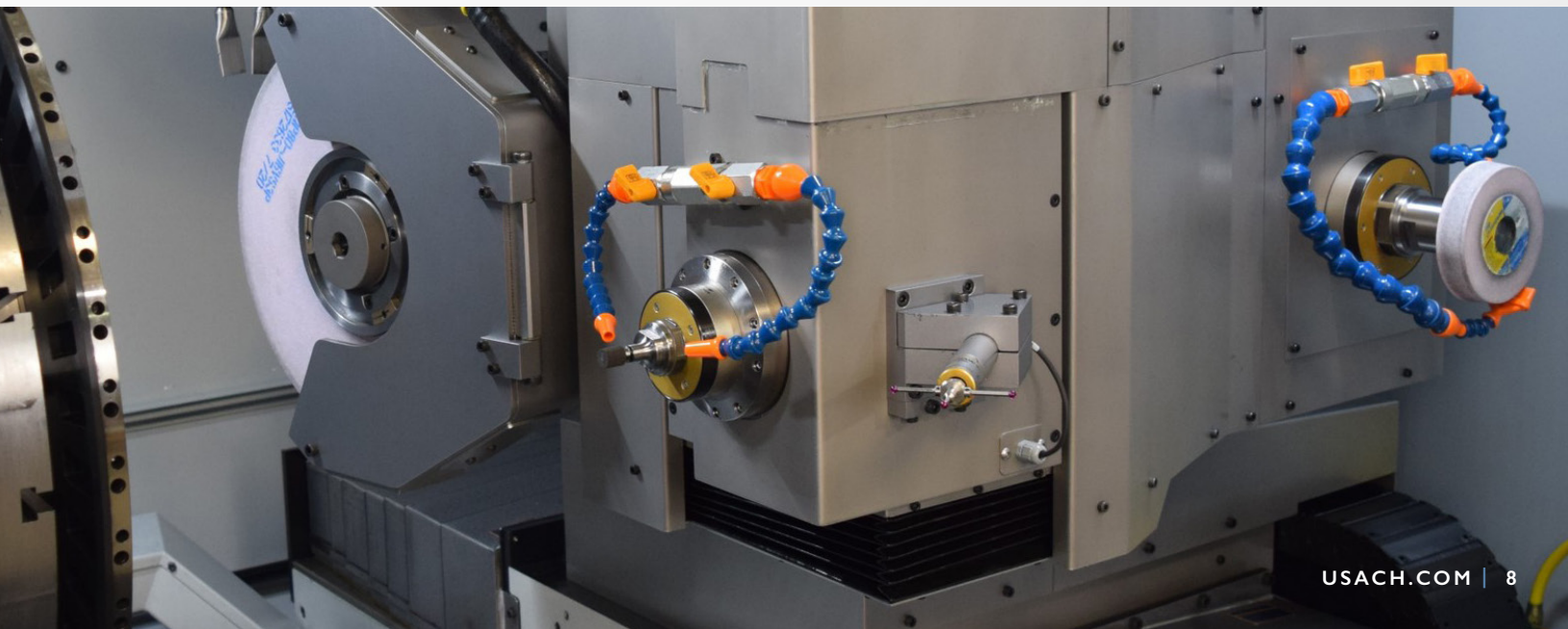
CENTER DRIVE SYSTEM

Solutions allow to grind ID's, faces and OD's on parts from both sides in sub-micron tolerances. The grinding surfaces are positioned to the grinding spindles using the two CNC B-Axes.



SHOE GRINDING WITH RADIUS DRESSER

For precision bearing race grinding the platform is configured in the C execution and equipped with high precision radius dresser using single point diamonds or driven rotary disc.



USACH CYLINDRICAL PLATFORM

USACH BUILDS OD GRINDING SOLUTIONS THAT COMBINE FEATURES AND CONFIGURATIONS NOT OFFERED BY OTHER MACHINE SUPPLIERS.

True custom solutions with workhead and tailstock combinations for parts of up to 6,000 lbs. Steady rests, workheads or center drive system can be mounted on individual manually operated or motor driven slides. Parts are clamped between centers hydraulically or by CNC force control.

OD contour grinding with or without oscillation is available. On board gage system mounted to the wheel head or machine table allow for high precision on board gaging of parts and process control.

THE WHEEL HEAD:

Several wheelhead configurations are available. A specialty of USACH is the combination of OD spindles with a swivel A-axis for flute grinding and OD grinding in one setup. For off center special features such as grooves or holes spindles are mounted on a vertical axis. In addition, vertical and horizontal wheel changers are available extending the machines flexibility.

USACH 200 OD-L

Machine max length: 72" (2M)



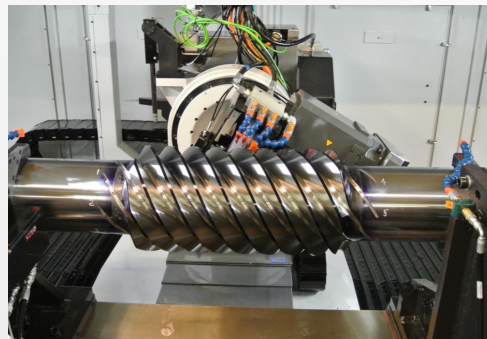
USACH 300 OD-L

Machine max length: 118" (3M)



USACH 500 OD-L

Machine max length: 196" (5M)



SPECIAL FEATURES

- Infinitely adjustable hydrostatic wheel head
- Dual wheel head
- Rotary Standard or Radius dresser
- Dressing systems for Metal bond wheels
- Center Drive systems for part of up to 23" (600mm)
- Contact less wheel gaging
- Vision Systems
- In- and post process gage systems
- Custom steady systems with NC compensation and positioning capabilities

AUTOMATION SYSTEMS

COMPLETE SYSTEMS PROVIDER:

- Robot Systems
- Gantry Systems
- Part Management Systems
- Complete production cells with a variety of machines and systems



USACH SUPPORT TEAM

USACH Support Team is always available for all your needs. We strive to make sure your USACH machines and equipment are running at peak performance.

CONTACT US TODAY TO LEARN MORE:

EMAIL: SERVICE@USACH.COM

PHONE: (800) 843-8801



